Sector Action Plan | 2021-2023

Food Cold Chain

AFCCC
Australian food cold chain council

STOP
FOOD WASTE
AUSTRALIA

Australian Government
Department of Agriculture,
Water and the Environment

1. Overview and Purpose

A high functioning, compliant cold chain is essential for reducing food waste and increasing the productivity of Australia's agri-food and fisheries sector.

It is, however, often overlooked given its ubiquitous nature, distributed ownership and shared responsibilities for product integrity. Studies by both international and Australian researchers detail the economic, social and environment benefits from both expanding the cold chain to foods not regularly refrigerated and improving the efficacy of our current systems.

The National Food Waste Strategy Baseline update (FIAL, 2021) found that 423,000 tonnes of food waste occurred in 'Distribution.' Since most of the commodities were 'fresh,' this reflects on the performance of the cold chain. Importantly this is an underestimate of the overall impacts of an ineffective cold chain, where food may be downgraded or wasted further along the supply chain in wholesale, retail or consumption stages as a result of temperature abuse during supply.

The purpose of this document is to REFRESH the initial sector action plan for the cold food chain (FIAL, 2020). (The original plan was prepared as a final year ANU student project, supervised by Food Innovation Australia Limited (FIAL).) While the initial plan is relatively recent, there have been advances, both in increased awareness within the cold chain and in the policy and governance settings for food waste reduction, that alter the context and priorities of the original plan. This document should be read as an addendum to the original plan, which synthesised important background information through applying the *Review, Plan, Do* process.[1]

A key focus of this Sector Action Plan is raising awareness, developing skills and capacity building across the breadth of cold chain actors. Programs such as the Cold Food Code and SME Benchmarking initiatives provide a structured approach to improving the performance of the cold chain and reducing food waste. Working with the Voluntary Agreement Program of the Australian Food Pact and AusIndustry's Entrepreneurs Program provides clear pathways to reach industry stakeholders with a vested interest in ensuring the cold chain performs optimally.

"A key focus of this Sector Action Plan is raising awareness, developing skills and capacity building across the breadth of cold chain actors."

Mark Mitchell
Chair, Australian Food Cold Chain Council

1. For an explanation of the *Review Plan Do* process see Section 3.5.3 of *Resources for implementing the National Food Waste Strategy* (FIAL, 2019).

2. Background and Context

Sector Action Plans

Sector Action Plans (SAPs) provide an opportunity to deploy targeted interventions to reduce significant food waste hotspots, while realising multiple economic, environmental and societal benefits for supply chain partners, collaborators and wider civil society.

Co-design is fundamental to creating an effective SAP. By working collaboratively with those key stakeholders most able to directly control or influence the root cause(s) of food waste hotspots and to take action to reduce or eliminate food waste in the value chain, SAPs create a 'bottom-up' framework for taking action on reducing food waste.

SAP initiatives for reducing the impacts of food loss and waste will generally fall under five pillars of activity:

The shape of each SAP and the balance of interventions between these pillars, will depend entirely on the focus of the plan, the willingness of stakeholders to undertake specific initiatives and the priorities emerging from the co-design process. A pivotal element of each SAP will be a program theory and logic map, illustrating causality and targeting areas for Monitoring, Evaluation, Reporting and Improvement (MERI).

Policy Levers
Federal, State & Local Government
Business policies & practices

Research, Development & Extension
Building the evidence
Identifying opportunities
Presenting findings

Implementation
Evidence-based, prioritized
Key partners
Objectives & deliveries

Building a Community of Practice
Changing behaviours & cultures
Training & Education
Shared Learning

MERI Framework
Metrics & KPIs agreed
Target, Measure, Act
Evaluate & report progress

Development of the initial Action Plan to Reduce Fruit and Vegetable Waste in the Australian Food Cold Chain

In 2020 the Food and Agriculture Growth Centre, trading as Food Innovation Australia Ltd (FIAL) worked with the Australian Food Cold Chain Council to develop a sector action plan, focused on reducing fruit and vegetable waste. The initial plan was compiled by a final year ANU student intern, with inherent limitations. This refresh augments the original analysis, program theory and long term desired outcomes of the initial plan:

▶ Increased information on the size and location of food loss across the cold chain

▶ An ongoing understanding of the root causes of food waste in the cold chain

▶ Increased compliance with best practice procedures in the cold chain

▶ Improved transparency of cold chain processes across the supply chain; including sharing data and coordinating responses amongst cold chain actors

▶ Improved coverage and operation of mobile and stationary refrigerated storage in the cold chain (FIAL, 2020).

Importantly, the initial SAP was focused on the cold chain from primary production to retail. It did not investigate cold chain optimisation in stores, food service, institutions or homes. This Refresh expands the scope by investigating opportunities for improving cold chain processes in the retail and consumption stages of the food supply chain.

3. Progress in 2020/2021 on Food Waste Reduction in Australia

Establishment of Stop Food Waste Australia

Stop Food Waste Australia (SFWA) has been established to lead a partnership with relevant industry, Government and research stakeholders to deliver the National Food Waste Strategy target of halving food waste by 2030. SFWA has initial funding from the Australian Government and a shared resources arrangement with Fight Food Waste Limited (FFWL) and, with the support of its core partner, the Waste & Resources Action Programme (WRAP), it will deliver a program of food waste reduction and transformation activities.

Specifically, SFWA is concentrating on four key areas of action:

As a priority, SFWA will deliver Target 2.1 of the 2019 National Waste Policy Action Plan to establish a "voluntary commitment program for businesses across the supply and consumption chain to engage in food waste reduction activities and to encourage industry-led action." SFWA is also responsible for a range of other food waste reduction and transformation activities, including developing sector action plans (SAPs), stimulating active stakeholder engagement and establishing new partnerships, acting as a home for food waste-related communication, and monitoring, evaluating and reporting the impact of its activities and those of its partners. The Australian Food Cold Chain Council is a founding partner in SFWA.

IMPLEMENT THE VOLUNTARY AGREEMENT: THE AUSTRALIAN FOOD PACT

COMMUNICATE, ENGAGE AND PARTNER FOR IMPACT

WE HAVE FOUR KEY AREAS OF ACTION

DEVELOP NEW AND IMPLEMENT THE EXISTING SECTOR ACTION PLANS

MEASURE, EVALUATE AND REPORT OUR PROGRESS

National Food Waste Strategy Feasibility Study

FIAL is sponsoring a Feasibility Study to update the initial National Food Waste Baseline (Arcadis, 2019), utilise the UN methodology to identify hotspots, apply interventions from international best practice and develop scenarios to test the feasibility of reducing Australia's food waste by half by 2030. This methodology is applied across the major stages of the food supply chain.

Waste associated with any poor performance of the cold chain is not assessed separately in the updated baseline but is reflected in the waste for advanced stages of the supply chain, from wholesale to consumption.

The Feasibility Study has focussed in on 18 of 47 potential interventions as being the most impactful in reducing food waste.

Three of these interventions specifically relate to improvements in the cold chain:

Employee engagement & behaviour change

Widespread adoption of best practice across wider food chain can reduce waste by engaging staff in mitigation opportunities across supply and storage, preparation, serving and disposal, and in building confidence to make decisions.

Data, analytics & waste audits

Implementing technologies and systems to better understand the stream of waste produced at institutions and hospitality. The ultimate aim would be to track the volume and cost of waste as well as the underlying reason for food losses, to encourage operational and behavioural

Invest in cold storage and cold chain improvements

Effective storage, refrigeration and stock management is absolutely critical for ensuring shelf life is maximised and potential losses are avoided in the supply chain. For example, ensuring 'first in first out' inventory control is enforced and new automation technologies are adopted.

Development of the Australian Cold Food Code

The Australian Food Cold Chain Council is developing a Cold Food Code and Cold Chain Professional Development Series. The first two modules with information and training on the Cold Chain Practitioner and use of thermometers were released in February 2021. A proposal for the next module on Fresh Produce has been submitted to the Fight Food Waste Cooperative Research Centre for collaborative development.

4. Refreshing Proposed Initiatives in the Cold Chain Sector Action Plan

"The initial SAP identified five focus areas or pillars of activity to reduce food waste"

The initial SAP identified five focus areas or pillars of activity to reduce food waste across the cold food chain that remain applicable today:

▶ Research

▶ Education and Communication

▶ Infrastructure, Resources and Technology

▶ Collaboration

▶ Voluntary Agreements.

Proposed initiatives for the next two years, 2021-2023, are listed below under relevant pillars.

Research

Increasing understanding of how the Australian food cold chain operates and the consequent impact on food waste will provide a strong foundation to develop targeted initiatives to improve practice and deliver better outcomes from the sector. Research in this context focuses on the practical examination of critical elements that impact on cold chain performance such as data and analytics, the legislative and policy framework, current practice and opportunities for introducing new technologies.

The initial SAP identified several areas for further research:

▶ Examine food cold chain processes and practices to understand their contribution to food waste; and opportunities to reduce food waste.

▶ Apply a systems approach to understanding the performance and integrity of the cold chain, where relationships between different actors and stages of the end-to-end cold chain are analysed, not just within sectors.

▶ Investigate enabling, supportive or inhibiting legislation and programs to improve design and implementation of effective policy, practice change and education.

▶ Compile comprehensive and ongoing quantitative data and qualitative information on the extent to which best-practice is followed/ not followed in certain sectors and the impact of those decisions on the amount of food waste generated.

▶ Explore the feasibility of technology applications, such as radio frequency identification (RFID) technology and temperature, humidity and ethylene monitoring and management equipment to understand its potential to improve cold chain performance.

▶ Identify improvement opportunities and build new partnerships and collaborations to reduce food waste under a Voluntary Agreement Program (see below).

Initially for 2021-2023 the following research

#	Research Initiatives	Objectives	Commence within	Responsibility	Measures of success
R1	Real time monitoring	▶ Identify key parameters to be monitored ▶ Develop an efficient and affordable process for real time monitoring ▶ Identify capacity for alert response and measures to prevent food waste	6 months		Realistic and affordable monitoring protocols
R2	Business Case for improvements in the cold chain	▶ Demonstrate ROI for $ expended in cold chain improvements ▶ Link to Australian Food Pact	18 months		Business CBA Societal CBA

Education and communication

The food cold chain involves interactions between a large number of stakeholders who each have different roles, experience and concerns. As such, there is a varying degree of compliance, knowledge and awareness between and within sectors. The sector is characterised by poor information sharing and siloed approaches. Raising awareness and sharing clear practical guidance is fundamental to improving performance across the cold chain.

Extending the roll out of the Cold Food Code and Cold Chain Professional Development Series is a major initiative of the Australian Food Cold Chain Council. Development of the second module on fresh produce will set the scene for other additional modules in future. New modules will

be developed to reflect what is different about dairy, meat and seafood etc that needs to be specified in the Code. Most of these products also have food safety requirements and consequently current procedures are 'better' – with capacity for reasonable improvements, especially with regard to preventing and learning from events and incidents.

Establishing a culture of improving learning and changing behaviour of people working across the cold chain will be key to drive change. Business leaders, peak bodies and industry actors can support this approach by embedding a culture of open reflection, learning and improvement as the cornerstone for improvements.

#	Education and communication Initiatives	Objectives	Commence within	Responsibility	Measures of success
ED 1	Cold Food Code	Extend reach of the Code	underway	AFCCC	Number of cold food practitioners
ED 2	Business Case for improvements in the cold chain	Expand Code re; specifics of commodities; commencing with fresh produce	3 months	AFCCC with Fresh Produce Alliance and HIA	% of XX transport/ industry trained
		Apply learnings from fresh produce to other commodities	9 months	Relevant industry associations	% of XX transport/ industry trained
ED 3	Raise awareness of Cold Food Code	▶ Extend reach of code ▶ Showcase industry led approach to training	ASAP	SFWA and partners	Number of cold food practitioners
		Capitalise on new channels to market eg Entrepreneurs Program	Over time	Emergent groups	
ED 4	Embed Cold Food Code in the Australian Food Pact	▶ Ensure best practice incorporated ▶ Use signatories to 'wholesale' to staff and suppliers	6 months	SFWA with Australian Food Pact signatories	Optimise Target Measure Act
ED 5	Expose SME's to cold chain Benchmarking Tool	Modify existing Benchmarking tool for SME's; require for registration in AusIndustry Entrepreneur webinars	6 months	AFCCC with AusIndustry	Build awareness of cold chain parameters and understanding of SME's starting position
ED 6	Implement behaviour change awareness and skills development	Implement better processes	Campaign to commence in 9 months	Trucking companies	Increased profit

Collaboration / Engagement

Opportunities for improved collaboration exist between industry bodies, government, logistics companies and all sectors across the cold chain. Collaboration and stakeholder engagement are key to the success of implementation of this SAP.

True engagement which enhances stakeholder relationships, improves innovative thinking, and has the potential for greater geographical impact is fundamental.

#	Collaboration/ Engagement Initiatives	Objectives	Commence within	Responsibility	Measures of success
CE 1	Host a Cold Chain Summit and Trade Show	Bring together actors across the cold chain to build awareness & foster innovation as the foundation for cold chain improvements via a Trade show, conference and policy discussions	TB held in ~ October 2022	AFCCC	Number of attendees, number of exhibitors, Positive feedback from survey of attendees
CE 2	Develop and implement a stakeholder engagement strategy (See Appendix 1 for Stakeholder list)	▶ Enhance stakeholder relationships ▶ Improve innovative thinking ▶ Extend geographical impact	6 months	AFCCC with SFWA	Improved awareness of issues in the food cold chain and Effectiveness of Interventions
CE 3	Establish a cold chain community of practice	▶ Data and knowledge sharing Extend learnings ▶ Improve the effectiveness of educational programs.	12 months	AFCCC with SFWA	Sharing information and learnings

Voluntary Agreement Program

The Australian Food Pact is an ambitious voluntary agreement program (VAP) bringing together a broad range of organisations in a new pre-competitive collaboration to make our food system more sustainable, resilient, and circular. At its heart is a multi-year commitment to identify priorities, develop solutions and implement change at scale – in signatories, across their value chains, via new partnerships and collaborations, and by spreading good practice across Australia. Voluntary commitments are a proven way of tackling food waste, focusing on prevention, reuse (donation) and food chain transformation and innovation, and a profitable food system.

The use of an internationally recognised Target Measure Act (TMA) approach with signatories provides an overarching framework for the delivery of the Pact. Signatories and stakeholders are encouraged to adopt Target Measure Act as the framework for their food waste reduction activities. This approach is already being applied by other organizations, including WRAP, Champions 12.3 and the Consumer Goods Forum.

#	Voluntary Agreement Initiatives	Objectives	Commence within	Responsibility	Measures of success
VAP 1	Pact signatories- initial cold chain focus	Rigorous understanding of current cold food chain practices, through audits and clear data recording, essentially a TMA approach for the cold food chain (scheduled audits)	Within first year	SFWA -Pact signatories	Documentation of cold chain parameters and performance within a TMA framework
VAP 2	Pact signatories: Improving outcomes from supply chain	Focus on management of cold chain within supply chain	Second year+	SFWA -Pact signatories	Share temperature and quality data (up and down supply chain)
		Establish clearing house for incidents			Enable identification and learning from incidents
		Establish Quality Management Framework / Systems to understand, 'fix' and reassess			Proactive application of data in decision making?
VAP 3	Pact signatories: food service, hospitality and institutions	Include optimising cool rooms as part of their VAP [ensure transport good practice also]	Medium term	SFWA - Pact signatories in food service, hospitality and	Documentation of cold chain/ cool room parameters and performance in TMA framework
VAP 4	VAP for ancillary services such as transport companies??	Expand VAP to include other Companies in food system such as transport companies	Medium to longer term	SFWA	Embed TMA for trucking companies

5. Monitoring, Evaluation, Reporting and Improvement (MERI) Framework

One of the primary roles of SFWA is provide a MERI framework for its activities. Several parameters will be tracked across all programs of SFWA:

▶ Food waste reduced (tonnes)

▶ Number of meals provided though food rescue and relief

▶ Additional program performance indicators assessed during a more detailed three-yearly program evaluation process will include: greenhouse gas (GHG) emissions savings, economic savings, return on investment periods and jobs created.

In addition, there is an opportunity to gather more granular information to provide feedback on specific programs, initiatives and in this case, Sector Action Plans. Using the program logic of the original SAP provides an initial context for the collection and analysis of targeted data:

▶ Behaviour change among [cold chain] staff members / practitioners

▶ Improved knowledge of best practice procedures across the cold chain [participants]

▶ Improved performance monitoring and record keeping within cold chain e.g temperature records kept and shared across the cold chain from farm gate to retailer

▶ Increased implementation of [best practice] cold chain technology

In addition, each of the proposed initiatives above has nominated measures of success, which when amalgamated will provide insights to the four overall outcomes of the SAP:

▶ An ongoing understanding of the root causes of food waste in the cold chain

▶ Increased compliance with best practice procedures in the cold chain

▶ Improved transparency of – and accountability for - cold chain processes and performance across the supply chain

▶ Improved coverage and operation of mobile and stationery refrigerated storage in the cold chain (FIAL, 2020).

Developing a robust, fit-for-purpose MERI plan for the refreshed SAP is an additional action scheduled to occur within one year.

#	MERI Initiatives	Objectives	Commence within	Responsibility	Measures of success
MERI 1	Develop a MERI plan for the refreshed SAP	To create a fit -for-purpose MERI plan to ensure collection and analysis of targeted data	1 year	SFWA with AFCCC	Ability to track progress against program logic

Conclusion

A key focus of this Sector Action Plan is raising awareness, developing skills and capacity building across the breadth of cold chain actors.

Programs such as the Cold Food Code and SME Benchmarking initiatives provide a structured approach to improving the performance of the cold chain and reducing food waste. Working with the Voluntary Agreement Program of the Australian Food Pact and AusIndustry's Entrepreneur Program provides clear pathways to reach industry stakeholders with a vested interest in ensuring the cold chain performs optimally.

References

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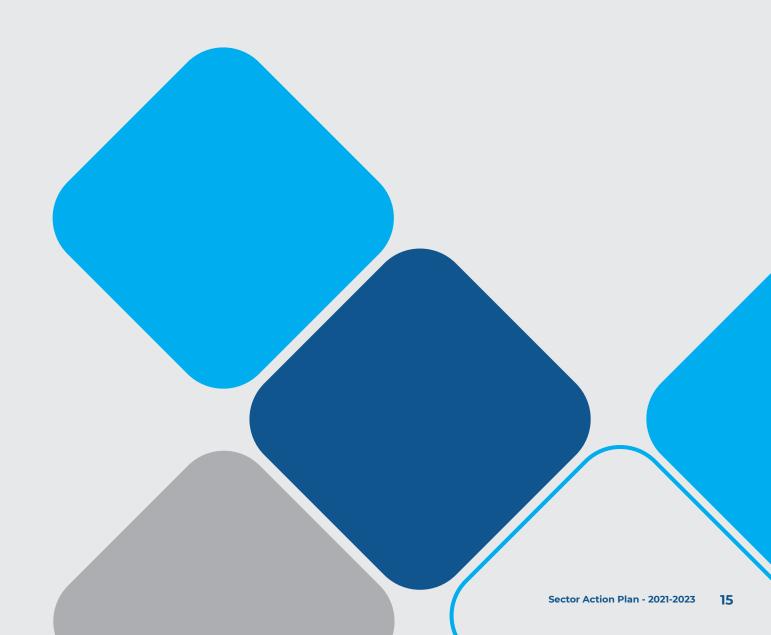Australian Government, 2017. The National Food Waste Strategy

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For further information please contact:
enquiries@fightfoodwastecrc.com.au
or visit www.stopfoodwaste.com.au

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